

## Chapter 1 Introduction

### 1-1. Purpose

This manual provides painting guidance to engineering, operations, maintenance, and construction personnel and other individuals responsible for the protection of U.S. Army Corps of Engineers (USACE) structures. It gives broad-base instructions on corrosion and corrosion protection using protective coating and state-of-the-art procedures that can be employed on Corps projects, which can aid in attaining better and, from a long-range viewpoint, more economical paint jobs.

### 1-2. Applicability

This EM applies to all HQUSACE elements, major subordinate commands, districts, laboratories, and field operating activities having responsibilities for the design and construction of civil works projects.

### 1-3. References

Required and related references are listed in Appendix A.

### 1-4. Abbreviations and Acronyms

Abbreviations and acronyms used herein are explained in Appendix B.

### 1-5. Neutral Language Use and Terms

*a.* Throughout this manual neutral language is used to include both masculine and feminine genders; any exceptions to this statement will be noted.

*b.* The words “paint,” “painting,” and “coating” are used broadly herein to indicate all common types of protective and decorative coatings, applied hot or cold, by brush, roller, spray, and other means.

### 1-6. Scope

*a.* Although this manual is not intended to be a general textbook on coatings and coatings application, the complexity of the modern coatings field justifies something more than a bare, utilitarian approach to the presentation of useful information. Therefore, moderately detailed discussions of coating materials and characteristics of applied coating systems are included, even though their immediate usefulness may not be apparent to those who are interested only in “practical” information. Presumably,

acquiring this additional knowledge will help personnel responsible for painting of civil works structures.

*b.* Little distinction is made between contract and hired-labor painting. When such subjects as selection of surface preparation and coating application equipment (Chapters 7 and 8, respectively) are discussed, it is recognized that the information may not be directly applicable to contract work for which the end result is specified rather than the means to that end. However, the information will provide a valuable background for those who inspect and administer contract painting work.

*c.* Certain classes of coatings systems are discussed in the manual even though they do not appear in CWGS 09940 and CEGS-09900. Some of these coating systems are included for general familiarization; others are included because they may be considered for adoption as standard painting schemes.

*d.* Materials such as galvanizing, metallizing, and protective tapes are discussed even though they are not commonly considered paints or coatings. The inclusion of these subjects illustrates that the protection of metal surfaces cannot logically be divided into precise, independent subjects.

*e.* Because this manual will be used extensively as a reference it includes a complete topic index to facilitate locating specific information. Appendix A will help locate references to particular standard specifications.

### 1-7. Painting for Corrosion Protection and Aesthetics

Protection and the appearance (aesthetics) of surfaces are among the most important elements of the maintenance costs of civil works projects, particularly those with large areas of exposed steel. The protection problem may become evident even in the design stage; the engineer may overdesign to provide a safety factor against the corrosion that may take place in the future. Inadequate control of metal corrosion results in an economic loss of millions of dollars annually. Conservation of natural resources requires that the unnecessary and inexcusable waste of materials through inadequate protection be prohibited. Exorbitantly high standards of protection and appearance also are unjustifiably expensive. A principal means of preventing deterioration is the use of paint coatings. The paint industry has made important progress in improving protective coatings. The prompt adoption and proper use of these improved materials can be expected of those responsible for the protection and appearance of costly structures. The time has passed when an oil-base (alkyd) coating could be

applied, regardless of surface characteristics and exposure conditions. The present-day complexity of materials available in the coating field requires that engineers devote more study to the subject. The advent of regulations for volatile organic compounds (VOCs) as well as regulations for the removal of lead coatings from industrial structures has drastically changed the way the industry is using coatings for corrosion protection. Local organizations are not encouraged to conduct paint evaluation programs of their own; these programs may not be useful and can be misleading unless carried out carefully and under controlled conditions that permit side-by-side comparisons with coatings of known capabilities. In connection with improvement of painting operations, it would be worthwhile for each district to designate an engineer from within the existing organization to act as an adviser on matters relating to paints and painting. The duties of this employee, probably in conjunction with other work, would include:

*a.* Keeping informed on the specifications, manuals, and other directives on paints and painting disseminated by USACE and other Government agencies.

*b.* Advising other interested members of the organization on matters related to protective coatings.

*c.* Assisting in the preparation of specifications for paint procurement and contract or hired-labor painting.

*d.* Assisting in the selection of paints for specific jobs.

*e.* Providing technical guidance on maintenance painting operations.

*f.* Ensuring the adequacy of inspection of painting operations.

*g.* Retaining paint service records.

*h.* Remaining current with governing Occupational Safety and Health Administration (OSHA) regulations as well as current environmental protection laws related to surface preparation and painting operations.